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ABSTRACT

The validity of the Communication Skills and General Knowledge portions of the NTE (National Teacher Examination) Core Battery as predictors of student performance was examined, including scores on the test of professional knowledge required for certification in teacher education programs. This predictive validity was compared to that of the Scholastic Aptitude Test mathematics and verbal scores and grade point averages representing the first and second halves of students' college work. A multiple regression technique was used with data from the records of 444 graduates from the University of North Carolina; data concerned the subjects' freshmen and sophomore years. Tests were not any more useful than were the grade point averages of freshman and sophomore years in predicting academic performance. The test scores did predict student performance on the test of professional knowledge. Further research is needed to determine whether such scores predict actual teaching performance. Three tables present statistical data. (SLD)

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THE INCREMENTAL PREDICTIVE VALIDITY OF NTE COMMUNICATION SKILLS AND GENERAL KNOWLEDGE TESTS USED FOR ADMISSION TO TEACHER EDUCATION AND IMPLICATIONS FOR POLICY

Introduction

There has been a rapid and widespread adoption of standardized tests of basic skills for admission to teacher preparation programs. The proportion of programs requiring students to pass a standardized or proficiency test for entry more than doubled from 23% in 1980-81 to 48% in 1987, a 110% increase (Holmstrom, 1985; Rudner, 1987). The speed with which the tests have been adopted can be appreciated when it is compared with the rate at which other commonly recommended reforms have been implemented. For example, there was little or no change from 1981 through 1985 in the following aspects of teacher education, although changes in all of them have been proposed by reform advocates: credit hours in teaching practicum; clock hours in field experiences; requirement of field experience; credit hours in subject matter outside education (except computer science); required subject matter majors outside of education. The only two commonly recommended reforms which have been adopted to any extent are: an increase in grade point average for entrance (from less than 30% of programs requiring a 2.5 in 1981, to more than 40% requiring it in 1985) and the use of exit tests (20% of programs adopted them in the same period) (Holmstrom, 1985). These changes are modest when compared with the 110% increase in the use of entrance tests.

At least two things can be said safely about a practice which has developed as fast as this one. First, it must have some powerfully appealing features, and second, it needs study, monitoring, and evaluation. Policymakers need to know whether the tests are valid for the uses to which they are put, and, if so, how the tests compare to alternative ways of

accomplishing the same purposes, and how test results can be used to the greatest advantage for students and programs. Research is beginning to provide information on which to base decisions. Guyton and Farokhi (1987) have found that tests of basic skills can predict subject matter knowledge as measured by a state teacher certification test. Olstad, Beal, and Marrett (1988) have found that two tests of basic skills measure the same competencies but that these competencies are different from the academic achievement measured by the grade point average.

Recent policy and practice in North Carolina provide a typical example of the situation in many states. In North Carolina formal admission to teacher preparation programs occurs at the end of the sophomore year, that is after a student has earned approximately 60 credits. The Communication Skills (CS) and General Knowledge (GK) portions of the NTE Core Battery have been required for admission to programs of teacher preparation since 1983.[1] The resolution which established the testing policy also indicated two uses for which the tests were adopted. The resolution called for an admission test, first, to ensure that students meet acceptable standards in academic areas such as the humanities, social studies, mathematics, and science. Meeting standards in academic areas has been understood to mean making satisfactory progress toward a degree as measured by grade point average (GPA). Second, the tests were adopted in order to inform each student of the probability that he or she might successfully complete the requirements for initial certification. The requirements for initial certification include earning a baccalaureate degree, as well as achieving a qualifying score on the NTE Professional Knowledge (PK) test (Resolution, 1983).

The study described here sought to establish the validity of NTE CS and GK as predictors of performance of students in teacher education programs, and

to compare this predictive validity to the predictive validity of Scholastic Aptitude Test scores (SATV, SATM), and a grade point average representing the first half of the student's college work, GPA1. The criteria were the score on NTE PK and the grade point average earned in the second half of the student's college work, GPA2. The study was designed to answer two questions: (a) What is the predictive validity of CS and GK when used to screen applicants to teacher education programs, when the criterion variables are PK and GPA2? (b) How does the predictive validity of CS and GK compare to that of SATV and SATM, and GPA1?

Method

Selection of Records for the Database

All members of the first group of teacher education students enrolled at fifteen constituent institutions of The University of North Carolina (UNC) System to whom the NTE CS and GK requirements applied were potential subjects of the study. The records used in the study were drawn from the UNC Student Data File (SDF). An historical search of the SDF produced a group of 646 graduates of programs leading to certification who entered The University as first-time freshmen (i.e., without transfer credits), and who earned GPA1 and GPA2 at the same institution at which they were freshmen.

GPA1 is a variable which is used to estimate the students' performance in the first part of the baccalaureate program. The SDF contains a once-a-year snapshot of students' credit hours and grade point average recorded in the fall of each year. The GPA1 is a GPA found in the SDF, which was earned on credit hours which were within one full-time semester of the credit hours needed to complete four full-time semesters at a given institution. For example, if 60 credit hours are required to achieve junior status at a given

institution, an allowable GPA1 for a student at that institution would be a GPA recorded in the SDF based on 45 to 75 credit hours. If more than one GPA was recorded in that range, the one earned at credit hours closest to 60 was chosen. If two GPAs were earned at credit hours equidistant from 60, the GPA earned at the higher credit hours was chosen.

GPA2 is the GPA earned in courses exclusive of those included in the GPA1. It was calculated from: the final GPA recorded in the graduated subfile of the SDF, the graded credit hours associated with the graduation GPA, and the graded credit hours associated with GPA1. For example, a student who had a GPA1 of 3.0 at 60 credit hours, and a GPA of 3.5 at graduation with 120 credit hours, would have a GPA2 of 4.0.

Five additional variables available from the SDF--SATV, SATM, CS, GK, PK--were added to these records. For 444, or 68.73 percent of the 646 potential subjects, all five of the variables--SATV, SATM, CS, GK, PK--were available. The selection criteria eliminated all transfer students from the database.

Procedure

Once members of the database were identified, a multiple regression technique was used to estimate whether or not each variable was of significant value in predicting PK or GPA2. A series of hierarchical multiple regressions was used to predict the PK outcome on the basis of: (a) SATV and SATM alone, (b) SATV and SATM combined with the college performance data, GPA1, (c) SATV, SATM, and GPA1, as well as the CS and GK, and (d) SATV, SATM, GPA1, CS, GK, and GPA2. The GPA2 was predicted in a similar set of analyses omitting step (d) which included GPA2 as a predictor. The results are presented in Tables 1 and 2.

Table 1

R^2 and F Values for the Incremental Use of Predictors for PK, N= 444

PREDICTORS	R^2	CRITERION: PK F	(df)	p <
SATV, SATM	.5729	295.78	(2, 441)	.0001
GPA1 | SATV, SATM	.5907	19.16	(1, 440)	.0001
CS, GK | SATV, SATM, GPA1	.6742	56.13	(2, 438)	.0003
GPA2 | SATV, SATM, GPA1, CS, GK	.6818	10.44	(1, 437)	.01

Table 2

R^2 and F Values for the Incremental Use of Predictors for GPA2, N= 444

PREDICTORS	R^2	CRITERION: GPA2 F	(df)	p <
SATV, SATM	.0755	18.02	(2, 441)	.0001
GPA1 | SATV, SATM	.4778	334.78	(1, 440)	.0001
CS, GK | SATV, SATM, GPA1	.4843	2.72	(2, 438)	.07*

*not significant

Results

Table 1 shows that the six predictor variables, entered in the indicated sequence, together account for over 68 percent of the variance in the PK criterion. The F values show that the addition of each variable, or pair of variables, is statistically significant in the prediction of PK but not all are incrementally useful. SATV and SATM, entered first, account for the largest share of the variance, (R^2=.5729). The R^2 (R^2=.5907) for the addition of GPA1 shows that it accounts for less than two percent of the variance once SATV and SATM are taken into account. Therefore, in spite of statistical significance (F=19.16, $p < .0001$), GPA1 cannot be said to add to the prediction of PK in a meaningful way. CS and GK (R^2=.6742) add more than eight percent to the variance accounted for when PK is regressed on SATV, SATM, and GPA1, and can be considered a meaningful as well as statistically significant factor. GPA2 (R^2=.6818) is not shown to be a useful additional predictor.

With regard to the prediction of GPA2, Table 2 shows that the five predictor variables together account for over 48 percent of the variance in the GPA2 criterion. SATV and SATM (R^2=.0755) account for less than eight percent of the variance of GPA2. GPA1 (R^2=.4778) explains an additional 40 percent of the variance in GPA2. CS and GK (R^2=.4843, F=2.72, not significant) are not shown to be useful in the prediction of GPA2 when entered last in the regression equation.

Table 3 summarizes and interprets the results. It shows that:

(1) CS and GK scores can predict scores on PK even though the content of the tests is different. (CS and GK are tests of communication skills and general knowledge respectively, and PK is a test of professional knowledge related to teaching.)

Table 3

The Incremental Predictive Validity of Selected Variable Used as Predictors for PK and GPA2

PREDICTORS*	INCREMENTALLY USEFUL FOR PREDICTING PK	GPA2
SATV and SATM	yes	no
GPA1	no	yes
CS and GK	yes	no
GPA2	no	not applicable

*Listed in the order in which they were entered into the regression equation.

(2) GPA1, a measure of college achievement similar to traditional requirements for admission to upper division work, predicts to GPA2, a measure of subsequent college achievement.

(3) CS and GK, which are tests of basic academic skills and knowledge considered to be prerequisites for subsequent achievement in college, are not incrementally useful in predicting GPA2, after GPA1 is taken into account.

(4) GPA2, a measure of achievement in the second part of the college career encompassing most of the professional courssework, does not predict PK, a test of professional knowledge.

Discussion

These results provide a preliminary evaluation of the basic skills admission testing policy based on the stated goals of the policy. The results indicate that the tests are not any more useful than the GPA of the freshman and sophomore year in predicting subsequent academic performance. The test scores are useful, however, in predicting student performance on the test of professional knowledge which is a requirement for initial certification. These results have policy implications in addition to establishing the extent of the predictive validity of CS and GK when used in admission to teacher education programs. They include:

Student advising

It has been shown that GPA1 and CS and GK are significant and complementary predictors of achievement in teacher preparation where the criteria are grade point average and the PK certification examination. The multiple regression equations which predict GPA2 and PK provide information on which to base student advisement, and should be used to be sure that each student will be informed of the probability that he or she might successfully complete the requirements for initial certification as a teacher in North Carolina.

Intervention strategies

A policy which requires the use of tests should be coupled with a policy which requires the dedication of resources to developing the capacities which are measured by the tests. The data from the present study provide evidence as to what those measured capacities are, and consequently how an intervention strategy might be designed. Two sets of standardized tests, SATV and SATM, and CS and GK, predict performance on a subsequent standardized test, PK. It can be noted that the content of these two sets of predictor tests--academic

skills and general knowledge--is not the same as the content of the criterion test--professional knowledge. This implies that the predictive power of the tests is based on the measurement of a common factor other than content. The factor may be test taking skills. The improvement of test taking skills should be an important component of any program aimed at developing the potential of test takers who do poorly on the predictors.

For the Future

The members of the database have begun teaching careers, and a study of the prediction of actual teaching performance should be undertaken. The data collected for the present study, along with the results of the teacher performance appraisal system and other measures should be used to answer the question: Do SAT scores, GPA's, and NTE scores predict actual teaching performance?

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